CLAIMS

1. A method of controlling an optical crosspoint switch which comprises intersecting input and output waveguides forming an intersection, a first upper waveguide which is arranged adjacent to the input waveguide and which extends at least partially along the input waveguide to the intersection, a second upper waveguide which is arranged adjacent to the output waveguide and which extends at least partially along the output waveguide from the intersection, and a corner mirror located at the intersection for coupling light signals from the first upper waveguide to the second upper waveguide, the method characterized by the steps of:

in an OFF state of the switch, varying the refractive index profile of the input and output waveguides or of the first and second upper waveguides in order to prevent light transfer from occurring between the first and second upper waveguides and the input and output waveguides respectively; and

in the OFF state of the switch, varying the loss/gain characteristics of the input and output waveguides or of the first and second upper waveguides, thereby enhancing the prevention of light transfer between the first and second upper waveguides and the input and output waveguides respectively.

2. A method as claimed in claim 1, wherein the varying of the refractive index profile and loss/gain characteristics of the input and output waveguide or of the first and second waveguides comprises applying an electrical signal thereto.

3. A method of controlling an optical crosspoint switch which comprises intersecting input and output waveguides forming an intersection, a first upper waveguide which is arranged adjacent to the input waveguide and which extends at least partially along

the input waveguide to the intersection, a second upper waveguide which is arranged adjacent to the output waveguide and which extends at least partially along the output waveguide from the intersection, and a corner mirror located at the intersection for coupling light signals from the first upper waveguide to the second upper waveguide, the method characterized by the steps of:

in an ON state of the switch, varying the refractive index profile of the input and output waveguides or of the first and second upper waveguides in order to enable light transfer to occur between the first and second upper waveguides and the input and output waveguides respectively;

in the ON state of the switch, varying the loss/gain characteristics of the input and output waveguides or of the first and second upper waveguides, thereby enhancing light transfer between the first and second upper waveguides and the input and output waveguides respectively.

4. A method as claimed in claim 3, wherein the varying of the refractive index profile and loss/gain characteristics of the input and output waveguide or of the first and second waveguides comprises applying an electrical signal thereto.

5. An optical crosspoint switch comprising:

intersecting input and output waveguides forming an intersection;

a first upper waveguide arranged adjacent to the input waveguide and extending at least partially along the input waveguide to the intersection;

a second upper waveguide arranged adjacent to the output waveguide and extending at least partially along the output waveguide from the intersection; and

a corner mirror located at the intersection for coupling light signals from the first upper waveguide

into the second upper waveguide, characterised in that the input and output waveguides or the first and second upper waveguides are made of a material having characteristics such that application of an electric signal thereto causes variation of the loss/gain characteristics and refractive index profile thereof.

6. A switch as claimed in claim 5, wherein increases in the electrical signal cause increases in loss of the input and output waveguides or of the first and second upper waveguides.

7. A switch as claimed in claim 5, wherein increases in the electrical signal cause increases in gain of the input and output waveguides or of the first and second upper waveguides.

8. A switch as claimed in claim 5, 6 or 7, wherein the input and output waveguides intersect at an angle of substantially 90 degrees.

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9. A switch claimed in any one of claims 5 to 8, wherein the first and second upper waveguides are of the same width as the input and output waveguides respectively.

10. A switch as claimed in any one of claims 5 to 9, wherein the first and second upper waveguides are not of the same thickness as the input and output waveguides respectively.

11. A switch structure as claimed in any one of claims 5 to 9, wherein the first and second upper waveguides are of the same thickness as the input and output waveguides respectively.

12. A switch as claimed in any one of claims 5 to 11, wherein the axis of the first and second upper waveguides are centred above the axis of the input and output waveguides respectively.

13. A switch as claimed in any one of claims 5 to 11, wherein the axis of the first and second upper waveguides are not centred above the axis of the input

and output waveguides respectively.

14. A switch as claimed in any one of claims 5 to 13, wherein the first and second upper waveguides and/or the input and output waveguides are not of constant width and/or constant thickness.

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15. A switch as claimed in any one of the claims 5 to 14, formed on a substrate material which is substantially planar.

16. A switch as claimed in any one of claims 5 to 15, wherein the waveguides are terminated by end facets that are not perpendicular to the waveguide axis.

17. An array of switches each switch being as claimed in any one of claims 5 to 16.

18. An array of switches as claimed in claim 17, wherein the input and output waveguides have tapered ends to enhance coupling between the array and as optical fibre.

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